

Name: _____

One side of an 8.5" x 11" piece of paper allowed, no books or calculators.

CIRCLE THE CORRECT ANSWER.

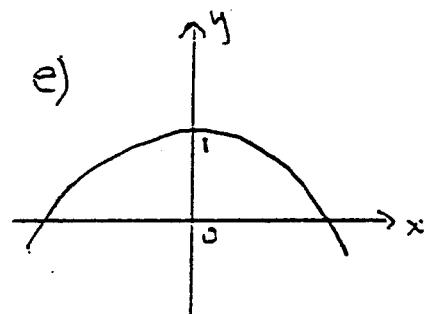
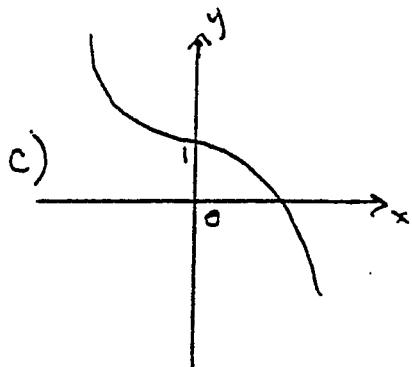
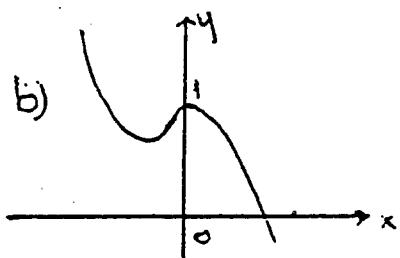
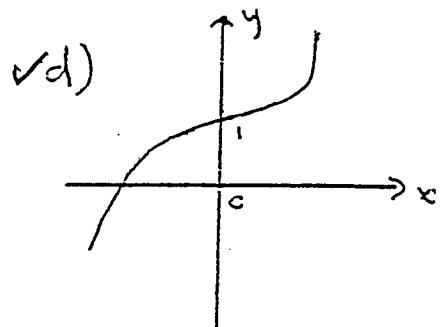
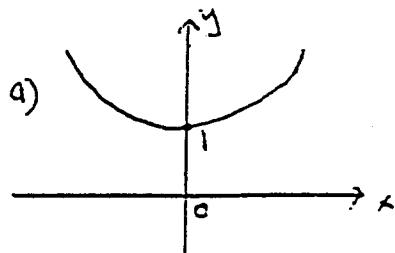
1. Let $f(x) = \sqrt{x^2 + 1}$ and $g(x) = \sqrt{x - 3}$. Which of the following represents the function $f(g(x))$ and its domain?

- (a) $\sqrt{x^2 + 1} \sqrt{x - 3}, x \geq 3$
- (b) $\sqrt{x - 2}, x \geq 3$
- (c) $\sqrt{x - 2}, x \geq 2$
- (d) $\sqrt{\sqrt{x^2 + 1} - 3}, |x| \geq \sqrt{8}$
- (e) $\sqrt{\sqrt{x^2 + 1} - 3}, x \geq 3$

2. The solution to the inequality $\left| \frac{-4x + 7}{5} \right| < 2$ is

- (a) $x > -\frac{3}{4}$
- (b) $-\frac{17}{4} < x < \frac{3}{4}$
- (c) $\frac{17}{4} < x < -\frac{3}{4}$
- (d) $-\frac{17}{4} > x > \frac{3}{4}$
- ✓(e) $-\frac{3}{4} < x < \frac{17}{4}$

3. Which of the following graphs represents the function $y = x^3 + x^2 + 1$?



4. Evaluate $\lim_{x \rightarrow \frac{1}{2}} \frac{6x^2 - x - 1}{4x^2 - 1}$.

- (a) 1 (b) 0 ✓(c) $\frac{5}{4}$ (d) $\frac{3}{2}$ (e) ∞

5. Evaluate $\lim_{x \rightarrow \infty} \frac{6x^2 - x - 1}{4x^2 - 1}$.

- (a) 1 (b) 0 (c) $\frac{5}{4}$ (d) $\frac{3}{2}$ (e) ∞

6. Evaluate $\lim_{x \rightarrow \infty} (3 \sin 5x + 7 \cos 6x)$.

- (a) 0 (b) something between -10 and 10 (c) something between -4 and 4
 (d) ∞ (e) does not exist

7. Evaluate $\int_0^{\pi/2} e^{-x} \sin 2x dx$

(a) $\frac{2}{5} (1 - e^{-\pi/2})$

(b) $-\frac{2}{5} (1 + e^{-\pi/2})$

(c) $\frac{2}{5} (1 + e^{-\pi/2})$

(d) $\frac{1}{5} (1 - e^{-\pi/2})$

(e) $\frac{1}{5} (1 + 2e^{-\pi/2})$

8. Evaluate $\int \frac{x - 3}{x^3 - 3x^2 - 28x} dx$

(a) $\frac{3}{28} \ln |x| + \frac{4}{77} \ln |x - 7| - \frac{7}{44} \ln |x + 4| + c$

(b) $\frac{3}{28} \ln |x| - \frac{7}{44} \ln |x - 7| + \frac{4}{77} \ln |x + 4| + c$

(c) $\frac{3}{28} \ln |x| + \frac{1}{44} \ln |x - 4| - \frac{10}{77} \ln |x + 7| + c$

(d) $\frac{3}{28} \ln |x| - \frac{10}{77} \ln |x - 4| + \frac{1}{44} \ln |x + 7| + c$